By Gennaro Tomma
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You may not want to sit next to a crying baby on an airplane. Apparently, moths feel the same way about plants.

When some plants are dehydrated or under some other form of stress, they cry a mournful melody made of ultrasonic clicks. Some moths are able to hear those clicks, and researchers now say they have discovered that the insects may interpret the sounds as a cue to choose on which plant to lay their eggs. The finding was described in a paper that was published online last month and has been submitted to the journal eLife.

“This is new,” said Rya Seltzer, an entomologist at Tel Aviv University and an author of the study. “Plants emit sounds, and insects are really listening to that. They’re tuned to that specific sound, and they know the meaning, and they consider it.”

In an earlier study, researchers showed that some plants emit ultrasonic clicks when under stress. Those sounds are imperceptible to people but fall within the hearing range of other animals, including insects.

This discovery lit a spark for Dr. Seltzer and her team: What if some insects actually interpret those sounds and use them to make decisions?

The researchers worked in a laboratory with a moth species called the Egyptian cotton leafworm. This insect is able to hear the sounds produced by some plants. The researchers wanted to know whether female leafworms would use the clicks to decide where to lay eggs, one of the most important choices in their lives.

“All of her children are going to develop on that specific choice that she made, and she has to make a fast call and a very good call,” Dr. Seltzer said.

As a first step, the team demonstrated that, at least in its experimental design, females usually preferred to lay eggs on a thriving plant, which is more likely to provide enough food for the newborn larvae, instead of on a dehydrated one.

Once that was established, the team devised other experiments to study whether the moths used a plant’s clicks to make the crucial decision.

The defining results arrived when the moths were presented with a hydrated tomato plant on one side of an experimental arena. On the other side was another tomato plant that was healthy and hydrated, but that emitted recorded sounds of distress from a dehydrated tomato plant. The moths, they found, strongly preferred to lay their eggs on the “silent” plant. Dr. Seltzer said that the females not only recognize that these signals indicate the presence of a plant, but also that the moths used the clicks to interpret the state of the plant producing them.

“They have done an incredibly good study,” said Jodi Sedlock, a sensory ecologist at Lawrence University in Wisconsin. “I think they provide very strong evidence that these moths, this species, is attending to those sounds emitted by plants.” But she added that “the reason that they’re attending to them isn’t entirely clear yet.”

As a next step, Dr. Sedlock would like to see this concept studied in nature. “It would be really, really interesting because sometimes what happens in the lab is different.”

Dr. Seltzer agreed that there needed to be additional research, such as how moths might use these acoustic cues in combination with scents and other signals from a plant. She also believes that the leafworm’s use of the cues may be more widespread. “A lot of insects hear ultrasonic, and a lot of plants produce ultrasonic under stress,” she said. “I’m putting my bet on that — that it’s a very wide phenomena.”

Until now, scientists suspected that moths use ultrasonic hearing to listen for mating calls and to avoid their predators: bats. The study adds an additional reason that “might even be older,” Dr. Seltzer said.

Other researchers offered a more cautious assessment of the paper. “Several key details necessary for understanding whether their hypothesis was proven are missing,” said Francesca Barbero, a zoologist at the University of Turin, including the number of eggs laid by the females.

But Dr. Barbero added that peer review and further refinement may result in a study that “could pave the way for further research into plant bioacoustics.”